

APPLICATION NO. 10/035346

August 3, 2004

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CLMPTO

1. (Currently Amended) A varactor comprising:  
a diode junction;  
a depletion region adjacent to the diode junction; and  
a doped region beginning at the diode junction, including the depletion region and having a nonuniform dopant concentration profile that continuously increases with increasing depth of the doped region starting from the diode junction and continuing to a peak concentration region at the deepest portion of the doped region;  
and wherein the continuously increasing nonuniform dopant concentration profile causes the varactor to have an approximately linear capacitance/voltage response characteristic.
2. Canceled
3. (Previously Amended) A varactor as defined in claim 1 wherein:  
the nonuniform dopant concentration profile is defined by an equation  $N = Bx \exp(m)$ , where  $N$  is the dopant concentration,  $x$  is the depth of the doped region,  $B$  is a concentration constant and  $m$  is an exponent that determines the degree of curvature of the dopant profile, and  $m$  is greater than 1.
4. Canceled
5. (Original) A varactor as defined in claim 3 wherein  $m$  is about 3.
6. (Previously Amended) A varactor as defined in claim 3 wherein:  
 $B$  is in a range from about  $1.0E13/\text{cm}^3$  to about  $1.0E19/\text{cm}^3$ ; and  
 $m$  is greater than one.
7. (Original) A varactor as defined in claim 6 wherein  $B$  is about  $1.0E16/\text{cm}^3$ .
- 8.-10. Canceled

CLAIMS 11-17 (CANCELLED)